Applicant Wireless Program — *WeCAN*
(Wireless Empowered Community Access Network)

FCC EDU 2011 Pilot Program WC Docket No. 10-222

Houston Public Library / HALAN IT
BEN 141211
500 McKinney St.
Houston, TX 77002

Enclosed:

Applicant Wireless Program Proposal (18 pages including cover page)

Attachments: HPL 5 Year Technology Plan (24 pages)

PROGRAM DESCRIPTION

a)   Operated under the Houston Public Library, the City's Digital Inclusion Initiative, WeCAN, was established to bridge Houston's digital divide.   Launched in March 2008, WeCAN serves as the public access component of the City's shared Municipal Broadband Wireless Network, which is the result of the City's commitment to provide increased broadband Internet in support of more efficient and effective public services and safety and greater access in underserved neighborhoods. WeCAN's goal is to make broadband Internet more accessible in high need neighborhoods through the creation of "neighborhood networks" of access, awareness, programs and services. The deployment of the networks includes affordable broadband Internet access, including WiFi Zones, opportunities to receive low-cost hardware and training, and relevant content to ensure benefit from the opportunities enabled. Community members within these neighborhoods take advantage of WeCAN via qualified Community Access Locations (CALS) such as libraries, schools and community-based organizations as well as strategically placed WiFi zones.   WeCAN's full implementation calls for deployment of more than 25 networks, impacting over 500,000 residents. The current build out includes funding for 10 networks, established through 2011.   Through the launch of WeCAN, the City is:

•   Deploying a comprehensive community broadband infrastructure - public safety, public service, and public community access.

•   Accelerating broadband adoption in underserved neighborhoods with potential impact of over 300,000 Houstonians by enabling approximately 150 community computer centers (up to 15 in each underserved neighborhood) with free WiMAX broadband service, computer hardware, and technology skills training and up to 250 neighborhood WiFi zones that enable viral community broadband access through public installation of last-mile premise equipment (i.e., WiFi modems and LAN/WLANs).

•   Improving City services and reduce operating costs by extending City connectivity to facilities and field maintenance staff (i.e., 2500 signalized traffic intersections, 500,000 water meters, 500 remote facilities, etc.) and substantially reducing overall City commercial broadband costs with low cost municipal broadband service.

b)   WeCAN was launched in March 2008. As part of its deployment, a total number of 67 mobile wireless devices (desktops) have been deployed at off premise at established

community access locations. Future deployment of off premise mobile wireless devices of 1,750 will take place during the pilot period: 315 desktop computers; 270 mac books; 426 net books; 213 kindles; 426 IPOD Touches; and 100 Self Installed Modems.

c)   According to the Pew Internet & American Life Project's June 2009 Home Broadband Adoption Report, populations most negatively correlated with home broadband adoption include those households with lower income and a high school diploma or less education. With over 300,000 Houstonians living at or below poverty and almost 30% of Houstonians 25 and older without a high school diploma, Houston is one of the nation's largest underserved communities in the adoption of home broadband services. Our studies show that only 48% of Houstonians have home broadband services and 47 of the 88 super neighborhoods have home broadband adoption rates below 40% (a primary measure used by the National Telecommunications and Information Administration (NTIA) to define underserved broadband infrastructure communities). As confirmed in the March 2010 Broadband Adoption in Low Income Communities commissioned by the Federal Communications Commission, price is only one factor shaping the fragile equilibrium of home broadband adoption, and price pressures go beyond the obvious challenge of high monthly fees. Hardware costs, hidden fees, billing transparency, quality of service, availability, and proficiency are major issues for low-income communities. In low-income communities, the tension between low rates of home broadband adoption and growing demand for Internet use falls mostly on key anchor institutions or "third spaces" (i.e., libraries, community centers, employment offices, and other social service organizations) that provide Internet access away from home or work. In the case of Houston, SRC data reports that the library ranked among the top locations where the Internet is accessed. In addition to providing access, libraries, and other third spaces, also play broader support roles in their communities, from skills development for new users to facilitating access to Internet-mediated social services, employment markets, and educational opportunities.

Local and state government budget deficits limit anchor institutions from using commercial broadband services to support required operation and service improvements. In addition, though Houston is the 4th largest city in the nation, the Houston community areas are very diverse in terms of household density and infrastructure. These areas do not provide the market drivers necessary to stimulate private investments in broadband infrastructure. In

addition to not offering service in areas required to support anchor institution applications. In addition, we estimate that approximately 500-thousand citizens live in these underserved/unserved infrastructure areas and have limited or no broadband service options.

The City has adopted WiMAX which then can convert to WiFi to reach these locations. WiMAX wireless broadband network operating in an FCC licensed 3650 MHz radio spectrum. The WiMAX network is being deployed to provide fixed (up to 20 Mbps) locations services intelligent transportation (2500 signalized intersections and 1500 school zone flashers), fixed network water automated meter reading (500-thousand AMR accounts), public safety (nomadic access for 200 patrol cars and 500 fire and emergency vehicles), public service (i.e., code enforcement, inspections, parking management, etc.), community colleges, and anchor institutions in unserved/underserved communities.

d) HPL provides train the trainer sessions through its Virtual Services Divisions for the Library's staff as well as WeCAN CAL staff and volunteers. Additionally, teachers, underserved youth and adults benefit from WeCAN through digital literacy and workforce development training offered at HPL and WeCAN CAL sites. HPL offers about 1500 trainings annually. Additionally, through the launch of WeCAN Works, the workforce development arm of WeCAN which provides the means to the underserved, unskilled, and underemployed for sustainable career paths and jobs; a total of 2,533 digital literacy classes, impacting a total of 18,116 underskilled and unskilled individuals, and 3,728 workforce development job seminars, impacting more than 23,910 underemployed/unemployed individuals have taken place at HPL and CAL sites citywide.

e) The implementation of WeCAN allows the City to effectively engage and interact with local nonprofits and community leaders, through the establishment of Digital Neighborhood Leadership Teams, on an ongoing basis to address other educational and socio-economic challenges of the community. Additionally, WeCAN facilitates continued relationship-building between the Houston Public Library, and other City and State departments, with the goal of providing collective educational and technological resources to under-resourced communities.

FINANCIAL NEED

Like other cities across the nation, the City of Houston is experiencing critical budget challenges due to the ongoing uncertainty in the economy. The City's five-year financial model shows revenues slumping; more than $50 million is to be drawn from reserves to bring the FY2010 budget into balance. Projections show expenditures exceeding revenues by an annual average of nearly $75 million through FY2014. The brunt of this impact felt in the next two years, as the City anticipates a $110 million shortfall that must be addressed by drawing down reserves and reducing investment. General fund revenues have decreased as sales tax revenues have dropped as much as $20 million. City revenues are projected to be down $43 million for FY2010. Meanwhile, rising expenditures are driven by contractually required increases in employee compensation and rising health care costs. Mayor Annise Parker has presented cost-cutting options for this fiscal year including employee furloughs, a number of across-the-board budget cuts in all departments, delaying pay raises or debt payments, and selling City property.

The Library has managed the impact of budget cuts to the department in a number of ways including reducing public service hours, reducing the materials budget, closing Central Library on Fridays and on Sundays during the summer months, and closing neighborhood libraries on Saturdays. In addition, positions throughout the organization have been either cut, remained unfilled, or reduced to part time. Further adjustments to HPL's current budget and staffing realities will require a departmental reorganization. The Library anticipates further budget reductions and attrition as a result of the City's growing deficit. Nonetheless, it is important to share that our goal to provide outstanding services to the citizens of Houston remains steadfast. Thus, federal funding assistance will be essential to the Library's achievement of its goals and project implementation by helping to offset and/or leverage current allocated funds towards the program's deployment.

COST INFORMATION

The following cost information is based on the deployment of the community wireless broadband infrastructure, technical and programmatic costs associated with the program implementation.

The table below provides cost information for eligible e-rate items associated with the program:

CATEGORY	# of Items	Frequency	Rate	Cost
WiFi Maintenance	1 (controller)	Annual	$2,500	$2,500.00
WiMAX Maintenance	10 (base stations)	Annual	$12,000	$120,000.00
CPE Pole/Power Use	250 (poles)	Annual	$125	$31,250.00
Network Use (PWE Backhaul Connectivity)	186 (sites)	Monthly	$12	$26,784.00
Cabling/ Connectors (New CAL Establishment)	160 (sites)	One Time	$500	$80,000.00

Total Projected Cost	**$260,534.00**

The table below provides cost information for non eligible e-rate items associated with the program:

CATEGORY	# of Items	Frequency	Rate	Cost
WiFi Installations (Electrician, Bucket Trucks, Installers, etc.)	185 (hot spots)	One Time	$500	$92,500.00
CAL Installations (Site Surveys, Installers, etc.)	160	One Time	$1,000	$160,000.00
WiMAX Installations	60	One Time	$23,333	$1,400,000.00
WiMAX Hardware (Base Stations)	60	One Time	$83,333	$5,000,000.00
WiFi Hardware (Radios)	185	One Time	$1,750	323,750.00.00
CAL Network Hardware (CPE)	160	One Time	$600	$96,000.00
CAL Wireless Devices	2,230		$1,900 Mac books; $600 desktops; $250 Kindles; $450 IPOD; $460 Net books; $300 SI Modems	$2,073,310.00
Portal (Development, Management, Maintenance)	-		$75,000	$75,000.00
Training (Digital Literacy & Workforce)	-		$170,000	$170,000.00

Total Projected Cost   **9,390,560.00**

COMMITTED RESOURCES

The following committed resources are available to implement the program as outlined below:

FUNDING SOURCE	Amount	Purpose	
ARRA BTOP II Funding	$3,700,000	Expansion of WeCAN to establish public computer centers (broadband connectivity, computer hardware, personnel, training)	
ARRA Public Transportation Grant Funding	$5,000,000	Deployment of WiMAX Network in support of community broadband infrastructure	
WeCAN Special Revenue Fund	$3,500,000	Deployment of WeCAN neighborhood networks of broadband connectivity, WiFi zones, computer hardware, training and content	
HPL General Operating Budget	$23,000.00	Supports Internet bandwidth and Filtering	

Total Projected Cost **$12,223,000.00**

EFFECT & IMPACT

Effects the program has had on the Library:

- Demonstrates the critical role that the library plays in the communities it serves beyond traditional library services.

- Emphasizes the important role that technology and having access to technology plays and substantiates the need for initiatives such WeCAN.

- The development of a model that can be adapted and utilized by other library systems based on lessons learned and best practices established.

- The development of strategies for community engagement that resulted in improved relationships between libraries and community members.

- Underscores the importance of collaborations and brings together federal, state and local government, industry and community-based organizations in support of community development.

- Cultivates a more engaged, informed and skilled patronage.

- Exposes underserved population to the vast library resources available to them as well as that of other educational and health and human services and providers in the city and more importantly, where they live.

- Positively impacts the people and the communities who are negatively impacted by the digital divide by targeting the people (i.e. low income, ethnic minorities, etc.) who need it most and bringing quality computer and Internet resources and services where it is needed most.

- Provides access to free, quality, computer and Internet education and resources to neighborhoods and individuals that would not otherwise have the opportunity.

- Development of strategic partnerships with federal government and local community-based organizations to bring resources that strengthened and supported the community infrastructure.

- Maximizes the impact of and services provided by the library given it has the deepest reach and greatest effect in underserved communities.

Impact since the 2008 launch of WeCAN:

- Established next generation technical infrastructure through a phased launch of 7 neighborhood networks in 7 underserved neighborhoods across the city (Gulfton, Sunnyside, Third Ward, Fifth Ward, Second Ward, OST/South Union, Magnolia Park)

- Established 16 Community Access Locations and 60 WiFi zones within these neighborhoods

- 15K unique network users; 5K residents per month benefiting from the access and training enabled

- Recipient, record $4.5M from Microsoft Corp to launch public/private workforce readiness model WeCAN Works

- Recipient, $3.7M from Department of Commerce's Broadband Technology Opportunities Program

- Recipient, 2010 NATAO Wireless Broadband Network of the Year; 2009 PTI Technology Solutions Award; 2008 Content Active Award

COST-EFFECTIVENESS ANALYSIS

The cost savings of using municipal broadband services vs. commercial broadband services to serve 160 CALs and 250 community Wi-Fi hot zones is approximately $6M over a 5 year period. This analysis is based on a cost of $300 per month (i.e., T1 service) to provide broadband service to each of the 410 service locations (i.e., 160 CALs and 250 Wi-Fi for a total of $7.5M over 5 years) vs. leveraging the excess bandwidth in the City's municipal broadband WiMAX network to provide superior service for a cost of $1.5M over 5 years (i.e., $400K WiMAX CAPEX, $375K Wi-Fi CAPEX, and $350K annual OPEX). In addition, commercial T1 service is not available at many of the service locations which are located in underserved areas of the city.

Additionally, HPL understands that its ability to serve as an anchor community resource institution is limiting in the current model which requires the constituency to access information at a specific location. Erecting more facilities with additional human and technical resources provide only finite options.

Extending Internet access to community partners will enable residents to have multiple points of contact with HPL's expanding digital library and archives. Wireless access enables HPL to connect these organizations without amassing an enormous debt using some of the traditional network communication techniques such as cabling and satellite.

COMPLIANCE MEASURES

HPL uses SmartFilter as our Firewall. Thus every request for an Internet page passes the filter on the way to the Internet. HPL strictly blocks all elements required by Children's Internet Protection Act. Besides blocking pornography, we use the SmartFilter to block most P2P activity which is a common source of fraud centered around download of copyright protected movies and recordings.   The P2P block can be circumvented by Library Staff for 15 minutes if the patron has a legitimate reason – most generally to deal with common photo album software that uses the P2P environment. The majority of the computers we would enable using this grant would be for training and not subject to use other than in a training environment. We believe this protects against abuse.

INTERNAL POLICIES & ENFORCEMENT

Internal policies and enforcement procedures to ensure the acceptable use of the devices, access and security are addressed are as follows:

1) Electronic security: All laptop devices deployed will be enabled for Security Computrace(r) LoJack(r) for Laptops, a software-based and BIOS resident theft recovery service by Absolute(r) Software. This service allows the ability to track the devices if they leave the premise and to recover them if removed unlawfully.

2) Automated library system: Consideration for licensing of Millenium automated library system for off-premise use is being vetted. Standard library checkout procedures will be enforced, requiring the use of a valid ID such as a Drivers License or Passport to be retained at the circulation desk until the unit is returned. Standard library penalties-including levying of replacement charges, fines, and holds on user records-will apply for failure to return the device in good working order.

3) Memorandum of Agreement: All Community Access Locations are required to sign off on a Memorandum of Agreement which details acceptable use of equipment and enforcement procedures if there are violations and/or breach of that agreement. Additionally, the memorandum stipulates the CAL to incorporate technology usage policies that are consistent with existing policies instituted at HPL.

4) Internet Use Policy: All users must agree to sign off on the Internet Use Policy before Internet access is allowed. The Internet Use Policy is a comprehensive policy that speaks to rules governing use.

LIBRARY SYSTEM & POVERTY LEVEL

Houston Public Library (HPL) serves the seventh largest service population in the country, which is also one of the most ethnically and culturally diverse. Via its 42 locations, HPL serves 2,779,913 people, a population that is 38% Hispanic, 31% White, 25% African American, 5% Asian and 1% Other. Notably, 27% of Houston's population is under the age of 17 and 8.4% are under the age of 5. This proportion of the youth is well above the national average and represents a significant challenge to our educational system. Unfortunately, 20% of the families in HPL's service area live at or below the poverty level. HPL's mission is to offer a broadly defined program of educational, informational and enrichment opportunities for persons of all ages, throughout Houston and the surrounding region. Houston Public Library holds 3.8 million items, and in the past year (2009) was visited by 7.2 million visitors, either in person or on-line. With a staff of 574, HPL answered 877,714 reference questions, circulated more than 7.4 million books, magazines, and audio-visual materials and conducted 12,742 programs, attracting 262,793 participants.

The skills necessary to work, prosper and participate in current society are tied to the ability to use information and communication technology tools. While the City of Houston has a reputation for its technological innovation, many Houstonians have yet to experience the significant civic, educational and economic benefits of the information age. HPL recognizes that in order to address the changing economic and demographic landscape of Houston and the diverse population of 2.2 million people it serves, there must be a continual evolution of expanded and new services provided to meet these ever changing needs and to deliver enhanced, exceptional library services. Houston Public Library (HPL) has been leading efforts to provide public access to technology is since 1993. The scope of services HPL offers includes; technical training, literacy programs, workforce development training and staff training. Through this effort, HPL provides physical access to technology as well access to the digital literacy skills necessary to fuel personal and professional growth. As the first ever library-based digital inclusion initiative WeCAN complements HPL's innovative approach to its use for technology information and education.

The primary filing entity is HPL/HALAN and that Billed Entity number is 141211. The discount rate for HPL/HALAN is 79%. The following chart outlines the participating libraries including their

billing entities and represents the percentage of students in our service area that are eligible for free and reduced lunch for the period of 2010-2011*:

Billed Entity #	FSCS #	Library	Urban or Rural	School District	% of Students Eligible for School Lunches
88391	TX0099-011	Houston - Flores	Urban	HISD	**79%**
88401	TX0099-031	Houston - Smith	Urban	HISD	**79%**
88407	TX0099-007	Houston - Clayton	Urban	HISD	**79%**
88413	TX0099-024	Houston - Montrose	Urban	HISD	**79%**
88436	TX0099-013	Houston - Heights	Urban	HISD	**79%**
88449	TX0099-006	Houston - Carnegie	Urban	HISD	**79%**
88456	TX0099-032	Houston - Stanaker	Urban	HISD	**79%**
88471	TX0099-022	Houston - Melcher	Urban	HISD	**79%**
88501	TX0099-030	Houston - Scenic Woods	Urban	North Forest ISD	80%
88508	TX0099-009	Houston - Dixon	Urban	HISD	**79%**
88514	TX0099-027	Houston - Park Place	Urban	HISD	**79%**
88526	TX0099-026	Houston - Oak Forest	Urban	HISD	**79%**
88545	TX0099-010	Houston - Fifth ward	Urban	HISD	**79%**

88547	TX0099-033	Houston - Tuttle	Urban	HISD	**79%**
88565	TX0099-036	Houston - Young	Urban	HISD	**79%**
88618	TX0099-017	Houston - Kashmere	Urban	HISD	**79%**
88627	TX0099-020	Houston - Looscan	Urban	HISD	**79%**
88630	TX0099-019	Houston - Lakewood	Urban	North Forest ISD	80%
88641	TX0099-028	Houston - Pleasantville	Urban	HISD	**79%**
88668	TX0099-012	Houston - Frank	Urban	HISD	**79%**
88670	TX0099-023	Houston - Meyer	Urban	HISD	**79%**
88678	TX0099-035	Houston - Walter	Urban	HISD	**79%**
88726	TX0099-037	Houston - Robinson/Westchase	Urban	Alief ISD	79%
88743	TX0099-034	Houston - Vinson	Urban	HISD	**79%**
88769	TX0099-015	Houston - Johnson	Urban	HISD	**79%**
88784	TX0099-029	Houston - Ring	Urban	Spring Branch ISD	58%
88799	TX0099-016	Houston - Jungman	Urban	HISD	**79%**
88865	TX0099-004	Houston - Alief	Urban	Alief ISD	79%
88880	TX0099-005	Houston - Bracewell	Urban	Pasadena ISD	76%

88893	TX0099-025	Houston - Moody	Urban	HISD	**79%**
88915	TX0099-018	Houston - Kendall	Urban	Spring Branch ISD	58%
88925	TX0099-014	Houston - Hillendahl	Urban	Spring Branch ISD	58%
88969	TX0099-021	Houston - Mancuso	Urban	HISD	**79%**
88982	TX0099-003	Houston - Acres Homes	Urban	Aldine ISD	86%
89011	TX0099-008	Houston - Collier	Urban	Aldine ISD	**86%**
141211	TX0099-002	Houston - Central	Urban	HISD	**79%**
224286	TX0099-039	Houston - Blue Ridge	Urban	Fort Bend ISD	35%
16020527	TX0099-040	Houston - Stella Link	Urban	HISD	**79%**
16035001	TX0099-042	Houston - Admin Bldg 820 Marston	Urban	HISD	**79%**
16042188	TX0099-043	Houston - SW Multiservice Center	Urban	HISD	**79%**
16042194	TX0099-044	Express - Discovery Park	Urban	HISD	**79%**
16042190	TX0099-045	Express - Hermann Park	Urban	HISD	**79%**
16020528	TX0099-046	Gregory School	Urban	HISD	**79%**

*Source: National School Lunch Program: Children from families whose income is at or below the level shown on the following scale are eligible for either free or reduced-price meals:

GLOSSARY

Specific terms and acronyms that will be used throughout this document are defined as follows:

Acronym	Definition
CAL	Computer Access Location
CBO	Community-based Organization
CPE	Customer Premise Equipment
DI	Digital Inclusion
FBO	Faith-based Organization
LAN	Local Area Network
ODI	Office of Digital Inclusion
PWE	Public Works & Engineering
SI	Indoor Subscriber Unit
SU	Subscriber Unit
WMAN	Wireless Metropolitan Area Network

Term	Definition
Alvarion Wi2 System	The Wi2 system comprises a self-contained combination of an advanced Wi-Fi access point and a BreezeMAX SU-ODU that provides backhaul connectivity.
Computer Access Location	A city-owned or privately-owned entity that provides key social, educational and human services, including, computer and Internet access, computer and Internet training, workforce development and other training.
Community-based Organization	A non-profit organization that provides various social, educational and human services to the local community.
Customer Premise Equipment	Onsite equipment provided by the customer that will be connected to the City's network for the purpose of transmitting network data.
Faith-based Organization	A religious non-profit organization that provides various social, educational and human services to the local community.
Indoor Subscriber Unit	An indoor broadband radio located at a CAL that is used to send/receive data between the CAL and the nearest WiMAX base station.
Subscriber Unit	An outdoor broadband radio located at a CAL that is used to send/receive data between the CAL and the nearest WiMAX base station.
Wireless Metropolitan Area Network	A wireless communications network that covers a geographic area such as a city or suburb.